

REMARKS

I. Introduction

In view of the above amendments and the following remarks, reconsideration of the rejections contained in the Office Action of September 1, 2009 is respectfully requested.

By this amendment, claims 1-2, 5-7, 10, 13-14, and 16-17 have been cancelled without prejudice or disclaimer to the subject matter contained therein and claims 18-30 have been added. Claims 3-4, 8-9, 11-12, 15, and 18-30 are now pending in the application. No new matter has been added by these amendments.

II. Prior Art Rejections

Currently, claims 1-2, 6, 10, 13-14 and 16-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. (WO 03/050436) in view of Merelli (US 6,244,982), claims 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamamoto et al. in view of Merelli and further in view of Kuznets et al. (US 5,700,214), claims 3-4 and 11-12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayakawa et al. (7,037,229) in view of Merelli, claims 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayakawa et al. in view of Merelli and further in view of Kuznets et al., and claim 15 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Hayakawa et al. in view of Merelli and further in view of Poiret et al. (US 6,849,012).

The prior art rejections of claims 1-2, 5-7, 10, 13-14, and 16-17 are believed to be moot in view of the cancellation of those claims.

Claim 3 is allowable over Hayakawa et al., Merelli, and the remainder of prior art of record, whether taken alone or in combination, for at least the following reasons. Claim 3

requires a chain tensioner comprising: a housing formed with a cylinder chamber, a plunger slidably mounted in said cylinder chamber, said cylinder chamber defining a pressure chamber behind said plunger; a spring mounted in said cylinder chamber and biasing said plunger outwardly away from said cylinder chamber; a retraction restrictor mechanism for preventing said plunger from retracting toward a closed end of said cylinder chamber beyond a predetermined distance; an oil supply passage formed in said housing and communicating with said pressure chamber, said oil supply passage configured to supply a hydraulic oil such that a pushing force applied to said plunger is dampened by the hydraulic oil; a ring fitting groove formed in an inner periphery of said cylinder chamber near an open end of said cylinder chamber; a radially elastically deformable elastic ring received in said ring fitting groove in a radially expanded state; and an engaging groove is formed in an outer periphery of said plunger near a rear end of said plunger; said elastic ring being engageable in said engaging groove and being configured to be radially compressed in said engaging groove such that an outer diameter of said elastic ring is larger than an inner diameter of said cylinder chamber and said elastic ring is disposed in both said engaging groove and said ring fitting groove to prevent axial movement of said plunger in a direction away from said closed end of said cylinder chamber, and wherein a bore is formed in said plunger such that said plunger includes an outer surface and an inner surface, wherein a screw rod is disposed at least partially within said bore, wherein said retraction restrictor mechanism includes an internal thread formed in said bore on said inner surface and an external thread formed on said screw rod, and wherein said retraction restrictor mechanism and said elastic ring constitute separate structures such that said elastic ring is operable to prevent axial movement of said plunger independent of said retraction restrictor mechanism.

On page 11 of the Office Action, it is asserted that Merelli discloses “a chain tensioner (20) wherein a plunger (31) has a ring fitting groove (312) formed in an outer periphery of said plunger near a rear end of said plunger...and a radially elastically deformable elastic ring (313) received in said ring fitting groove in a radially compressed state...and an engaging groove (322) formed in an inner periphery of said cylinder chamber near an open end of said cylinder chamber (Fig. 2) said elastic ring being engagable (sic) in said engaging groove and being configured to radially expand in said engaging groove...” (See lines 1-13 of the Office Action; emphasis added.) It is further asserted that “It would have been obvious...to modify the tensioner of Yamamoto et al. to include an elastic ring, a ring fitting groove on the outer periphery of the plunger and an engaging groove in the inner periphery of the cylinder, as taught by Merelli...” (See lines 14-18 of the Office Action.)

The assertions cited above, even if taken as true, do not establish a prima facie case of obviousness with respect to claim 3. “The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.” MPEP 2142, emphasis added. The obviousness rationale set forth in the Office Action explains why an invention other than that which is claimed would have been obvious. As such, the Office Action fails to establish a prima facie case of obviousness of the claimed invention.

Specifically, as quoted above, the Examiner asserts that it would have been obvious to include in the tensioner of Yamamoto et al. a ring fitting groove on the outer periphery of the plunger near a rear end of the plunger, as taught by Merelli; however, such a modification would not yield the claimed invention because claim 3 requires a ring fitting groove formed in an inner periphery of said cylinder chamber near an open end of said cylinder chamber. The Office Action does not cite any prior art which discloses a ring fitting groove formed in an inner

periphery of said cylinder chamber near an open end of said cylinder chamber, nor provide any explanation of why that claimed configuration would have been obvious. Moreover, the Examiner asserts that it would have been obvious to include in the tensioner of Yamamoto et al. an engaging groove in the inner periphery of the cylinder, as taught by Merelli; however, such a modification would not yield the claimed invention because claim 3 requires an engaging groove formed in an outer periphery of said plunger near a rear end of said plunger. The Office Action does not cite any prior art which discloses an engaging groove formed in an outer periphery of said plunger near a rear end of said plunger, nor provide any explanation of why that claimed configuration would have been obvious

Further still, as quoted above, the Examiner asserts that Merelli discloses a radially elastically deformable elastic ring received in said ring fitting groove in a radially compressed state, and being configured to radially expand in said engaging groove. The Examiner further asserts that it would have been obvious to include an elastic ring, as taught by Merelli, in the tensioner of Yamamoto et al. However, such a modification would not yield the claimed invention because claim 3 requires a radially elastically deformable elastic ring received in said ring fitting groove in a radially expanded state, and being configured to be radially compressed in said engaging groove.

In summation, the obviousness rationale set forth in the Office Action is insufficient to establish a prima facie case of obviousness with respect to claim 3 because the rationale only explains why it would have been obvious to provide a configuration other than that which is claimed. There is no cited prior art which discloses the claimed configuration, and no explanation of why the claimed configuration would have been obvious.

New independent claim 21 requires all of the limitations of claim 3, and is thus patentable over the prior art of record for at least the reasons set forth above in support of claim 3.

Additionally, claim 21 further requires that the elastic ring is disposed in said ring fitting groove such that said outer periphery of said plunger contacts and slides along said inner periphery of said elastic ring as said plunger slides relative to said cylinder chamber, said plunger not being slidable along said inner periphery of said elastic ring when said elastic ring is engaged in said engaging groove.

As discussed above with respect to claim 3, Merelli does not disclose a ring fitting groove formed in an inner periphery of said cylinder chamber near an open end of said cylinder chamber, and does not disclose a radially elastically deformable elastic ring received in said ring fitting groove in a radially expanded state. Instead, as seen from figure 2 and as acknowledged in the Office Action, the groove (322) of Merelli is formed in the plunger. Merelli does not disclose the elastic ring being disposed in said ring fitting groove such that said outer periphery of said plunger slides along said inner periphery of said elastic ring as said plunger slides relative to said cylinder chamber, and thus Merelli cannot meet the requirements of claim 21.

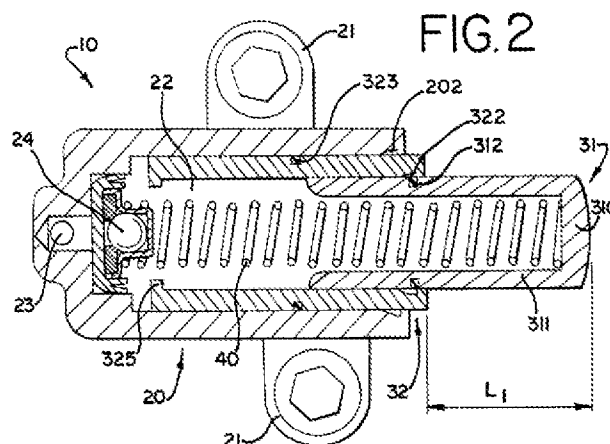


Figure 2 of Merelli (US 6,244,982)

As discussed above, the present invention has a plunger which slides along the elastic ring disclosed in the inner periphery of the cylinder chamber. Because plungers in such chain tensioners are more smoothly formed than the inner periphery of the cylinder chamber, this configuration provides improved performance and less wear on the elastic ring as compared to the configuration of the Merelli reference. Further, it appears that there would have been no reason to modify any of the prior art of record to yield a configuration which would meet the requirements of claims 3 and 21. It is thus submitted that the invention of the present application, as defined in claims 3 and 21, is not anticipated nor rendered obvious by the prior art, and yields significant advantages over the prior art. Allowance is respectfully requested.

Claims 4, 8-9, 11-12, 15, and 18-20 depend, directly or indirectly, from claim 3 and are thus allowable for at least the reasons set forth above in support of claim 3. Claims 22-30 depend, directly or indirectly, from claim 21 and are thus allowable for at least the reasons set forth above in support of claim 21.

In view of the foregoing amendments and remarks, inasmuch as all of the outstanding issues have been addressed, Applicants respectfully submit that the present application is now in condition for allowance, and action to such effect is earnestly solicited. Should any issues remain after consideration of the response, however, the Examiner is invited to telephone the undersigned at the Examiner's convenience.

Respectfully submitted,

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